CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A chimeric protein comprising:

a) a first polypeptide comprising a papillomavirus L2 capsid polypeptide comprising a papillomavirus capsid protein L1-binding region; and

b) a second polypeptide comprising at least one immunogenic epitope, wherein said first polypeptide is fused at its amino- or carboxy- terminus to said second polypeptide.

2. The chimeric protein of claim 1, wherein said first polypeptide is fused at its amino terminus to said second polypeptide.

3. The chimeric protein of claim 1, wherein said second polypeptide is fused at its amino or carboxy-terminus to said first polypeptide.

4. The chimeric protein of claim 3, wherein said second polypeptide is fused at its carboxy-terminus to said first peptide.

5. The chimeric protein of claim 1, wherein said chimeric protein further comprises a glutathione-S-transferase protein, wherein said chimeric protein is fused at its amino- or carboxy- terminus to said glutathione-S-transferase protein.

6. The chimeric protein of claim 5, wherein said chimeric protein is fused at its carboxy terminus to said glutathione-S-transfer protein.

7. The chimeric protein of claim 1, wherein said papillomavirus capsid protein L1 binding region is derived from a papillomavirus capsid protein L2 polypeptide selected from the group consisting of HPV6, HPV6a, HPV11, HPV16, HPV18, HPV30, HPV31, HPV33, HPV35, HPV39, HPV42, HPV43, HPV44, HPV45, HPV51, HPV52, HPV54, HPV55, HPV56, and HPV70 capsid protein L2 polypeptides.

8. The chimeric protein of claim 6, wherein said papillomavirus capsid protein L2 polypeptide is selected from the group consisting of HPV6b, HPV11, HPV16, and HPV33 capsid protein L2 polypeptides.

9. The chimeric protein of claim 6, wherein said papillomavirus capsid protein L2 polypeptide is an HPV11 capsid protein L2 polypeptide.

10. The chimeric protein of claim 1, wherein said papillomavirus capsid protein L1-binding domain comprises an amino acid sequence selected from the group consisting of the amino acids comprising SEQ ID NO:1, [HPV11] identified at positions 1-455, positions 157-455, positions 313-455, 346-455, 346-439, 396-455, and 413-419, the amino acids comprising SEQ ID NO:2, [HPV 6B]identified at positions 413-419, and 400-443, the amino acids comprising SEQ ID NO:3, [HPV 16] identified at positions 417-423, and positions 412-455, and SEQ ID NO:4, [HPV 33] identified at positions 423-429, and positions 406-449, and substantially identical homologs thereof.

11. The chimeric protein of claim 1, wherein said immunogenic peptide is a viral oncogenic protein.

12. The chimeric protein of claim 1, wherein said immunogenic peptide is papillomavirus E7 protein.

13. The chimeric protein of claim 1, further comprising a linker between said first polypeptide and said second polypeptide.

14. The chimeric protein of claim 1, wherein said chimeric protein is expressed in a bacterial expression system.

15. The chimeric protein of claim 13, wherein said bacterial expression system is an *E. coli* expression system.

16. The chimeric protein of claim 1, further comprising a complex comprising a papillomavirus L1 capsid polypeptide or substantially identical homolog thereof non-covalently bound to said chimeric protein via said chimeric protein's papillomavirus capsid protein L1-binding domain.

17. The chimeric protein complex of claim 16, wherein said complex is a capsomere.

18. The capsomere of claim 17, wherein the stoichiometry of said chimeric protein to said papillomavirus L1 capsid polypeptide in said capsomere is approximately 1:5.

19. The capsomere of claim 17, wherein said papillomavirus L1 capsid polypeptide is selected from the group consisting of HPV6, HPV6a, HPV11, HPV16, HPV18, HPV30, HPV31, HPV33, HPV35, HPV39, HPV42, HPV43, HPV44, HPV45, HPV51, HPV52, HPV54, HPV55, HPV56, and HPV70 L1 capsid polypeptides.

20. The capsomere of claim 17, wherein said papillomavirus L1 capsid polypeptide is selected from the group consisting of HPV6b, HPV11, HPV16, and HPV33 L1 capsid polypeptides.

21. The capsomere of claim 17, wherein said papillomavirus L1 capsid polypeptide is HPV11 L1 capsid polypeptide.

22. The capsomere of claim 17, wherein said papillomavirus L1 capsid polypeptide further comprises a glutathione-S-transferase protein, wherein said papillomavirus L1 capsid protein is fused at its amino- or carboxy- terminus to said glutathione-S-transferase protein.

23. The capsomere of claim 17, wherein said papillomavirus L1 capsid protein or fragment is expressed in a bacterial expression system.

24. The capsomere of claim 17, wherein said bacterial expression system is an *E. coli* expression system.

25. The capsomere of claim 17, wherein both said chimeric protein and said papillomavirus L1 capsid protein are co-expressed in a bacterial expression system.

26. The capsomere of claim 25, wherein said bacterial expression system is an *E. coli* expression system.

27. A nucleic acid sequence encoding the chimeric protein of claim 1.

28. An expression vector providing for the expression of the nucleic acid sequence of claim 27.

29. A nucleic acid sequence encoding the complex of claim 16.

30. An expression vector providing for the expression of the nucleic acid sequence of claim 29.

31. A method to elicit an immune response to papillomavirus in a patient, said method comprising administering to said patient a complex according to claim 1.

32. A method to elicit an immune response to papillomavirus in a patient, said method comprising administering to said patient a complex according to claim 16.

33. A prophylactic or therapeutic vaccine for eliciting an immune response to a papilloma virus infection, comprising a prophylactic or therapeutically effective amount of a complex according to claim 1 and a pharmaceutically effective carrier.

34. The vaccine of claim 33 further comprising an adjuvant.

35. A prophylactic or therapeutic vaccine for eliciting an immune response to a papilloma virus infection, comprising a prophylactic or therapeutically effective amount of a complex according to claim 16 and a pharmaceutically effective carrier.

36. The vaccine of claim 35 further comprising an adjuvant.

37. A chimeric protein comprising:

a) a first polypeptide comprising a papillomavirus L1; and

b) a second polypeptide comprising at least one immunogenic epitope;

wherein said first polypeptide is fused at its amino- or carboxy- terminus to said second polypeptide by way of an amino acid linker.

38. The chimeric protein of claim 37, wherein said first polypeptide is fused at its amino terminus to said amino acid linker.

39. The chimeric protein of claim 37, wherein said second polypeptide is fused at its amino or carboxy-terminus to said amino acid linker.

40. The chimeric protein of claim 39, wherein said second polypeptide is fused at its carboxy-terminus to said amino acid linker.

41. The chimeric protein of claim 37, wherein said chimeric protein further comprises a glutathione-S-transferase protein, wherein said chimeric protein is fused at its amino- or carboxy- terminus to said glutathione-S-transferase protein.

42. The chimeric protein of claim 41, wherein said chimeric protein is fused at its carboxy terminus to said glutathione-S-transfer protein.

43. The chimeric protein of claim 37, wherein said papillomavirus capsid L1 polypeptide is selected from the group consisting of HPV6, HPV6a, HPV11, HPV16, HPV18, HPV30, HPV31, HPV33, HPV35, HPV39, HPV42, HPV43, HPV44, HPV45, HPV51, HPV52, HPV54, HPV55, HPV56, and HPV70 capsid protein L1 polypeptides.

44. The chimeric protein of claim 42, wherein said papillomavirus capsid protein L1 polypeptide is selected from the group consisting of HPV6b, HPV11, HPV16, and HPV33 capsid protein L1 polypeptides.

43. The chimeric protein of claim 42, wherein said papillomavirus capsid protein L1 polypeptide is an HPV11 capsid protein L1 polypeptide.